Amendments to the Claims:

1. (Currently Amended) A method of enhancing the information contents which can be derived from a first image, containing motion artifacts, of a moving object, which method includes the following steps:

    a. using ~~two~~ further images which represent the object in a respective
5   state of motion with as few motion artifacts as possible,

    b. determining a motion model which characterizes states of motion assumed by the object while performing the motion between the ~~two~~ states of motion,

    c. forming an intermediate image of the object from the motion model and the ~~two~~ further images, the intermediate image representing the object at least
10 approximately as if it had performed the motion,

    d. forming a combination image from the intermediate image and the first image.

2. (Currently Amended) A method of enhancing the information contents which can be derived from a first image, containing motion artifacts, of a moving object, which method includes the following steps:

    a. using ~~two~~ further images which represent the object in [[a]]
5   respective states of motion with as few motion artifacts as possible,

    b. determining a motion model which characterizes states of motion assumed by the object while performing the motion between the ~~two~~ states of motion,

    c. focusing the first image by means of the motion model.

3. (Currently Amended) A method of enhancing the information contents which can be derived from a first image, to be reconstructed from projections and containing motion artifacts, of a moving object, which method includes the following steps:

5   a. using ~~two~~ further images which represent the object in a respective state of motion with as few motion artifacts as possible,

    b. determining a motion model which characterizes states of motion assumed by the object while performing the motion between the ~~two~~ states of motion,

c. forming an intermediate image of the object from the motion model
and the ~~two~~ further images, the intermediate image representing the object at least
substantially as if it had performed the motion,

d. reconstructing the first image from the projections of the object and
the intermediate image.

4. (Previously Presented)   A method as claimed in claims 1
wherein a respective motion vector field is determined for parts of the object in order
to determine the motion model.

5. (Currently Amended) A method as claimed in claims 1, wherein
in order to form the intermediate image, first images of other states of motion of the
object are formed by means of the ~~two~~ further images and the motion model, the
images thus formed being weighted and subsequently superposed together with the
~~two~~ further images and in conformity with the frequency at which the respective state
of motion represented in the images occurs while the motion is performed.

6. (Previously Presented)   A method as claimed in claim 1,
wherein the intermediate image and the first image are registered, notably elastically
registered, prior to the formation of the combination image.

7. (Previously Presented)   A method as claimed in claim 1,
wherein the combination image is focused in a further step.

8. (Currently Amended) A method as claimed in claim 2, wherein a
combination image is formed from the focused first image and one of the ~~two~~ further
images, possibly by means of registration.

9. (Currently Amended) A method as claimed in claims 1, wherein
the image is a PET image or a SPECT image and the ~~two~~ further images are one of
CT images and MR images.

10. (Previously Presented)   An image processing system which includes a data processing unit for carrying out a method as claimed in claims 1.

11. (Previously Presented)   An examination apparatus, notably a medical examination apparatus, which includes

- a device for forming images and/or projections by means of a first imaging method,

- a device for forming images and/or projections by means of a second imaging method,

- an image processing system which includes a data processing unit for carrying out a method as claimed in claims 1.

12. (Previously Presented)   A   computer   readable   medium containing instructions for controlling a data processing unit in such a manner that the data processing unit can carry out a method as claimed in claims 1.

13. (Previously Presented)   A method as claimed in claim 2 wherein a respective motion vector field is determined for parts of the object in order to determine the motion model.

14. (Previously Presented)   A method as claimed in claim 3 wherein a respective motion vector field is determined for parts of the object in order to determine the motion model.

15. (Currently Amended) A method as claimed in claim 2 wherein in order to form the intermediate image, first images of other states of motion of the object are formed by means of the ~~two~~ further images and the motion model, the images thus formed being weighted and subsequently superposed together with the ~~two~~ further images and in conformity with the frequency at which the respective state of motion represented in the images occurs while the motion is performed.

16. (Currently Amended) A method as claimed in claim 3 wherein in order to form the intermediate image, first images of other states of motion of the object are formed by means of the ~~two~~ further images and the motion model, the images thus formed being weighted and subsequently superposed together with the ~~two~~ further images and in conformity with the frequency at which the respective state of motion represented in the images occurs while the motion is performed.

17. (Currently Amended) A method as claimed in claim 2 wherein the image is a PET image or a SPECT image and the ~~two~~ further images are one of CT images and MR images.

18. (Currently Amended) A method as claimed in claim 3 wherein the image is a PET image or a SPECT image and the ~~two~~ further images are one of CT images and MR images.

19. (New)   A method of motion compensation comprising:

acquiring a first sequence of image data of a moving object by a first imaging modality data acquisition system;

acquiring a second sequence of image data of the moving object by a second imaging modality data acquisition system;

determining a motion model related to periodic motion of the object based on the second sequence of image data;

using the determined motion model, generating from the first sequence of image data a first modality image data set in a selected motion state.

20. (New)   The method as claimed in claim 10, further including:

generating a combined image data set in the selected motion state from the first modality image data set and a second modality image data set in the selected motion state.

21. (New)   The method as claimed in claim 19, wherein the first imaging modality data acquisition system includes one of a PET system and a SPECT system.

22. (New)   The method as claimed in claim 19, wherein the second imaging modality data acquisition system includes a computer tomography (CT) system, and ultrasound system, or a fast magnetic resonance (MR) tomography system.

23. (New)   The method as claimed in claim 19, further including:

registering coordinates systems of the first and second imaging modality data acquisition systems.

24. (New)   The method as claimed in claim 19, wherein the first and second imaging modality data acquisition systems are mechanically linked.

25. (New)   The method as claimed in claim 19, further including:

sensing motion of the object at least during acquisition of the second sequence of imaging data.

26. (New)   The method as claimed in claim 25, wherein the sensed motion is a cyclic motion in which the object cyclically assumes each of a plurality of motion states.

27. (New)   The method as claimed in claim 19, wherein the motion mode includes a motion vector field which indicates movement between at least two motion states.

28. (New)   An imaging system comprising:

a first imaging modality data acquisition system for generating a first imaging modality sequence of image data;

a second imaging modality data acquisition system for generating a second imaging modality sequence of image data;

a motion sensor for sensing object motion;

a processor for determining a motion model from the sensed motion and the second modality sequency of image data.

29. (New)   The imaging system as claimed in claim 28, wherein the motion model characterizes motion states assumed by the object while moving among a plurality of motion states.

30. (New)   The imaging system as claimed in claim 28, further including:

operating mathematically with the motion model to transform the first imaging modality image data to a selected motion state.

31. (New)   The imaging system as claimed in claim 28, wherein the first imaging modality data acquisition system is a PET system and the second imaging modality data acquisition system is a CT system.

32. (New)   A method for motion corrected imaging comprising:

generating image data using a first imaging modality;

generating a plurality of images using a second imaging modality;

from the second imaging modality images and sensed motion of an imaged object, generating a motion model;

operating on the first modality image data with the motion model to create a first modality image in a selected motion state.

33. (New)   The method as claimed in claim 32, further including:

combining the first modality image in the selected motion state with a second modality image in the selected motion state.